

L Number	Hits	Search Text	DB	Time stamp
1	229	(calculat\$5 comput\$5 determin\$5) near5 (time) near5 (increas\$5 decreas\$5) near5 (bandwidth transmission)	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2004/08/09 16:48
2	8	(rate adj based) and (calculat\$5 comput\$5 determin\$5) near5 (time) near5 (increas\$5 decreas\$5) near5 (bandwidth transmission)	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2004/08/09 15:28
3	0	(lossload) and (calculat\$5 comput\$5 determin\$5) near5 (time) near5 (increas\$5 decreas\$5) near5 (bandwidth transmission)	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2004/08/09 15:26
4	0	(loss adj load) and (calculat\$5 comput\$5 determin\$5) near5 (time) near5 (increas\$5 decreas\$5) near5 (bandwidth transmission)	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2004/08/09 15:27
5	23	(rate adj based) and (loss adj load)	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2004/08/09 16:01
6	2	6377583.pn.	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2004/08/09 16:01
10	1	09/850057	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2004/08/09 16:41
11	2	09/455445	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2004/08/09 16:45
12	2	6456592.pn.	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2004/08/09 16:48
13	15948	overflow or underrun	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2004/08/09 16:48
14	4	(overflow or underrun) and ((calculat\$5 comput\$5 determin\$5) near5 (time) near5 (increas\$5 decreas\$5) near5 (bandwidth transmission))	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2004/08/09 16:49
-	400	core adj router	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2004/08/09 11:58
-	221	(core adj router) and (edge adj router)	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2004/08/05 15:53
-	0	((core adj router) and (edge adj router)) and (calculat\$5 estimat\$6) near10 (congestion near10 threshold)	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2004/08/05 15:55

-	1695	(calculat\$5 estimat\$6) near10 (congestion traffic queue) near10 (value threshold)	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2004/08/05 15:56
-	1201	(calculat\$5 estimat\$6) near5 (congestion traffic queue) near10 (value threshold)	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2004/08/05 15:56
-	212	(calculat\$5 estimat\$6) adj (congestion traffic queue) near10 (value threshold)	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2004/08/05 15:56
-	22	(calculat\$5 estimat\$6) adj (congestion traffic queue) adj (value threshold)	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2004/08/05 16:24
-	884	(calculat\$5 estimat\$6 comput\$6) near10 (queue) near10 (value threshold)	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2004/08/05 16:45
-	30	((calculat\$5 estimat\$6 comput\$6) near10 (queue) near10 (value threshold)) and (exponen\$5) and (arithmetic\$5) and (virtual)	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2004/08/09 16:37
-	577	(calculat\$5 estimat\$6 comput\$6) near10 (queue) near10 (length)	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2004/08/06 14:54
-	1011523	(exponent\$5) adj ((convert\$6 transform\$6 chang\$6) near5 PC near5 GUIs near10 (NonPC adj devices)) (averag\$5)	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2004/08/06 13:01
-	369	(exponential\$5) adj (averag\$5)	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2004/08/06 13:02
-	13	(exponential\$5) adj (averag\$5) and ((calculat\$5 estimat\$6 comput\$6) near10 (queue) near10 (length))	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2004/08/06 13:03
-	2	(core adj router)and ((exponential\$5) adj (averag\$5)) and (calculat\$5 estimat\$6 comput\$6) near10 (queue) near10 (length)	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2004/08/06 14:56
-	6	(router)and ((exponential\$5) adj (averag\$5)) and (calculat\$5 estimat\$6 comput\$6) near10 (queue) near10 (length)	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2004/08/06 14:56
-	271	709/238.ccls. and (queue\$5 rout\$6) and (Qos (quality near3 service))	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2004/08/09 11:39
-	1	(709/238.ccls. and (queue\$5 rout\$6) and (Qos (quality near3 service))) and (determin\$5 calculat\$5 comput\$5) near10 (queue adj length)	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2004/08/09 09:27

-	17	(calculat\$5 comput\$5 determin\$5) near5 (time) near5 (interval lapse priod) near5 (increas\$5 decreas\$5) near5 (bandwidth transmission)	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2004/08/09 14:38
-	5	(calculat\$5 comput\$5 determin\$5) near5 (time) near5 (interval lapse priod) near5 (increas\$5 decreas\$5) near5 (bandwidth transmission)	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2004/08/09 11:56
-	4	(router) and ((calculat\$5 comput\$5 determin\$5) near5 (time) near5 (interval lapse priod) near5 (increas\$5 decreas\$5) near5 (bandwidth transmission))	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2004/08/09 12:26
-	6415	(congest\$5) near3 (control avoid\$5)	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2004/08/09 12:26
-	1	((congest\$5) near3 (control avoid\$5)) and (calculat\$5 comput\$5 determin\$5) near5 (time) near5 (interval lapse period) near5 (increas\$5 decreas\$5) near5 (bandwidth transmission)	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2004/08/09 12:40
-	1	09/907529	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2004/08/09 12:40

IEEE HOME | SEARCH IEEE | SHOP | WEB ACCOUNT | CONTACT IEEE



Membership Publications/Services Standards Conferences Careers/Jobs

Welcome  
United States Patent and Trademark Office
[Help](#) [FAQ](#) [Terms](#) [IEEE Peer Review](#)
[Quick Links](#)

## Welcome to IEEE Xplore®

- ☐ Home
- ☐ What Can I Access?
- ☐ Log-out

## Tables of Contents

- ☒ Journals & Magazines
- ☐ Conference Proceedings
- ☐ Standards

## Search

- ☐ By Author
- ☐ Basic
- ☐ Advanced

## Member Services

- ☐ Join IEEE
- ☐ Establish IEEE Web Account
- ☐ Access the IEEE Member Digital Library

## IEEE Enterprise

- ☐ Access the IEEE Enterprise File Cabinet

Print Format

Your search matched **45** of **1058483** documents.A maximum of **500** results are displayed, **15** to a page, sorted by **Publication year** in **Descending** order.

## Refine This Search:

You may refine your search by editing the current search expression or entering a new one in the text box.

congestion control&lt;and&gt;queue length&lt;and&gt;bandwidth

☐ Check to search within this result set

## Results Key:

**JNL** = Journal or Magazine    **CNF** = Conference    **STD** = Standard1 **REM: active queue management**

Athuraliya, S.; Low, S.H.; Li, V.H.; Qinghe Yin;  
Network, IEEE , Volume: 15 , Issue: 3 , May-June 2001  
Pages:48 - 53

[\[Abstract\]](#)    [\[PDF Full-Text \(100 KB\)\]](#)    **IEEE JNL**
2 **Fair bandwidth allocations through queue management in core-state networks**

Zha Mingyu; Gu Guanqun; Yuan Yuan;  
Global Telecommunications Conference, 2001. GLOBECOM '01. IEEE , Volume 4 , 25-29 Nov. 2001  
Pages:2248 - 2252 vol.4

[\[Abstract\]](#)    [\[PDF Full-Text \(163 KB\)\]](#)    **IEEE CNF**
3 **Optimal control of queues in computer networks**

Hassan, M.; Sirisena, H.;  
Communications, 2001. ICC 2001. IEEE International Conference on , Volume 2 , 11-14 June 2001  
Pages:637 - 641 vol.2

[\[Abstract\]](#)    [\[PDF Full-Text \(500 KB\)\]](#)    **IEEE CNF**
4 **Measurement-based effective bandwidth estimation for long range dependent traffic**

Xiang Yu; Ian Li-Jin Thng; Yuming Jiang;  
Electrical and Electronic Technology, 2001. TENCON. Proceedings of IEEE Reg 10 International Conference on , Volume: 1 , 19-22 Aug. 2001  
Pages:359 - 365 vol.1

[\[Abstract\]](#) [\[PDF Full-Text \(480 KB\)\]](#) [IEEE CNF](#)

---

**5 Port selected packet discarding scheme in ATM networks**

*Arakawa, Y.; Akiyama, Y.; Sakamoto, K.; Nishino, Y.; Sasase, I.;*  
Communications, Computers and signal Processing, 2001. PACRIM. 2001 IEEE  
Pacific Rim Conference on , Volume: 2 , 26-28 Aug. 2001  
Pages:518 - 521 vol.2

[\[Abstract\]](#) [\[PDF Full-Text \(368 KB\)\]](#) [IEEE CNF](#)

---

**6 Explicit rate flow control for ABR services in ATM networks**

*Ching-Fong Su; De Veciana, G.; Walrand, J.;*  
Networking, IEEE/ACM Transactions on , Volume: 8 , Issue: 3 , June 2000  
Pages:350 - 361

[\[Abstract\]](#) [\[PDF Full-Text \(384 KB\)\]](#) [IEEE JNL](#)

---

**7 A neural-fuzzy system for congestion control in ATM networks**

*Shie-Jue Lee; Chun-Liang Hou;*  
Systems, Man and Cybernetics, Part B, IEEE Transactions on , Volume: 30 , I  
1 , Feb. 2000  
Pages:2 - 9

[\[Abstract\]](#) [\[PDF Full-Text \(176 KB\)\]](#) [IEEE JNL](#)

---

**8 Receiver based management of low bandwidth access links**

*Spring, N.T.; Chesire, M.; Berryman, M.; Sahasranaman, V.; Anderson, T.;*  
*Bershad, B.;*  
INFOCOM 2000. Nineteenth Annual Joint Conference of the IEEE Computer and  
Communications Societies. Proceedings. IEEE , Volume: 1 , 26-30 March 2000  
Pages:245 - 254 vol.1

[\[Abstract\]](#) [\[PDF Full-Text \(452 KB\)\]](#) [IEEE CNF](#)

---

**9 Prediction-based network bandwidth control**

*Zhigang Jin; Yantai Shu; Jiakun Liu; Yang, O.W.W.;*  
Electrical and Computer Engineering, 2000 Canadian Conference on , Volume  
2 , 7-10 March 2000  
Pages:675 - 679 vol.2

[\[Abstract\]](#) [\[PDF Full-Text \(336 KB\)\]](#) [IEEE CNF](#)

---

**10 Feedback control for channel allocation in multimedia wireless sys**

*Komolkiti, P.; Liu, X.H.; Lee, C.C.; Haddad, A.H.; Needham, M.; Gilbert, S.;*  
American Control Conference, 2000. Proceedings of the 2000 , Volume: 4 , 2  
June 2000  
Pages:2794 - 2798 vol.4

[\[Abstract\]](#) [\[PDF Full-Text \(480 KB\)\]](#) [IEEE CNF](#)

---

**11 An effective and fairness merging algorithm for multipoint-to-point  
flow control in ATM networks**

*Zhang Lin; Zhang Huimin;*

Personal, Indoor and Mobile Radio Communications, 2000. PIMRC 2000. The IEEE International Symposium on , Volume: 1 , 18-21 Sept. 2000  
Pages:633 - 638 vol.1

[\[Abstract\]](#) [\[PDF Full-Text \(336 KB\)\]](#) [IEEE CNF](#)

---

**12 Rate-based congestion control for multipoint-to-point ATM ABR ser**

*Zhang Lin; Zhao Peng; Zhang Huimin;*

Communication Technology Proceedings, 2000. WCC - ICCT 2000. International Conference on , Volume: 1 , 21-25 Aug. 2000  
Pages:673 - 676 vol.1

[\[Abstract\]](#) [\[PDF Full-Text \(260 KB\)\]](#) [IEEE CNF](#)

---

**13 Scalable flow control for multicast ABR services**

*Xi Zhang; Shin, K.G.; Saha, D.; Kandlur, D.;*

INFOCOM '99. Eighteenth Annual Joint Conference of the IEEE Computer and Communications Societies. Proceedings. IEEE , Volume: 2 , 21-25 March 1999  
Pages:837 - 846 vol.2

[\[Abstract\]](#) [\[PDF Full-Text \(992 KB\)\]](#) [IEEE CNF](#)

---

**14 A CAC algorithm for per-VC queueing systems loaded by fractal tra**

*Garroppo, R.G.; Giordano, S.; Pagano, M.;*

Global Telecommunications Conference, 1999. GLOBECOM '99 , Volume: 2 , 1  
Pages:1610 - 1615 vol.2

[\[Abstract\]](#) [\[PDF Full-Text \(468 KB\)\]](#) [IEEE CNF](#)

---

**15 Effect of number of drop precedences in assured forwarding**

*Goyal, M.; Durresi, A.; Misra, P.; Chunlei Liu; Jain, R.;*

Global Telecommunications Conference, 1999. GLOBECOM '99 , Volume: 1A ,

Pages:188 - 193 vol.1a

[\[Abstract\]](#) [\[PDF Full-Text \(456 KB\)\]](#) [IEEE CNF](#)

---

[1](#) [2](#) [3](#) [Next](#)

---

[Home](#) | [Log-out](#) | [Journals](#) | [Conference Proceedings](#) | [Standards](#) | [Search by Author](#) | [Basic Search](#) | [Advanced Search](#) | [Join IEEE](#) | [Web Account](#) | [New this week](#) | [OPAC Linking Information](#) | [Your Feedback](#) | [Technical Support](#) | [Email Alerting](#) | [No Robots Please](#) | [Release Notes](#) | [IEEE Online Publications](#) | [Help](#) | [FAQ](#) | [Terms](#) | [Back to Top](#)

[Subscribe \(Full Service\)](#) [Register \(Limited Service, Free\)](#) [Login](#)Search: ☒ The ACM Digital Library ☐ The Guide

THE ACM DIGITAL LIBRARY

[Feedback](#) [Report a problem](#) [Satisfaction survey](#)

Terms used

**congestion control** and **queue length** and **bandwidth**

Found 197 of 140,980

Sort results  
by[Save results to a Binder](#)[Try an Advanced Search](#)Display  
results[Search Tips](#)[Try this search in The ACM Guide](#)☐ Open results in a new  
window

Results 1 - 20 of 197

Result page: [1](#) [2](#) [3](#) [4](#) [5](#) [6](#) [7](#) [8](#) [9](#) [10](#) [next](#)Relevance scale ☐ ☐ ☐ ☐ ☐

### 1 [QoS and congestion control: Improving TCP smoothness by synchronized and measurement-based congestion avoidance](#)

Chi Zhang, Vassilis Tsaoussidis

June 2003 **Proceedings of the 13th international workshop on Network and operating systems support for digital audio and video**Full text available: pdf(325.93 KB) Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#)

In this paper, we observe that although multiplicative decrease is necessary to accomplish fairness in congestion control, it does not inevitably sacrifice system throughput, as long as the system operates between the knee and the cliff, according to an equation. However, even when the system throughput is relatively stable, end users of real-time applications do not necessarily experience a smooth traffic, mainly caused by the unsynchronized window adjustments due to random congestion indicatio ...

**Keywords:** AIMD, TCP-friendly protocols, congestion control, fairness, real-time applications, responsiveness, smoothness

### 2 [End-to-end rate-based congestion control: convergence properties and scalability analysis](#)

Dmitri Loguinov, Hayder Radha

August 2003 **IEEE/ACM Transactions on Networking (TON)**, Volume 11 Issue 4Full text available: pdf(606.83 KB) Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#), [review](#)


In this paper, we study several properties of binary-feedback congestion control in rate-based applications. We first derive necessary conditions for generic binary-feedback congestion control to converge to fairness monotonically (which guarantees asymptotic stability of the fairness point) and show that AIMD is the *only* TCP-friendly binomial control with monotonic convergence to fairness. We then study steady-state behavior of binomial controls with  $n$  competing flows on a single ...

**Keywords:** MPEG-4, binomial algorithms, congestion control, multimedia streaming, packet loss scalability

### 3 [End-to-end congestion control for the internet: delays and stability](#)

Ramesh Johari, David Kim Hong Tan

December 2001 **IEEE/ACM Transactions on Networking (TON)**, Volume 9 Issue 6

Full text available:  pdf(333.72 KB) Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#)


Under the assumption that queueing delays will eventually become small relative to propagation delays, we derive stability results for a fluid flow model of end-to-end Internet congestion control. The theoretical results of the paper are intended to be decentralized and locally implemented: each end system needs knowledge only of its own round-trip delay. Criteria for local stability and rate of convergence are completely characterized for a single resource, single user system. Stability criteria ...

**Keywords:** Delayed systems, distributed systems, end-to-end congestion control

#### 4 Queue management for explicit rate based congestion control

Qingming Ma, K. K. Ramakrishnan

June 1997 **ACM SIGMETRICS Performance Evaluation Review , Proceedings of the 1997 ACM SIGMETRICS international conference on Measurement and modeling of computer systems**, Volume 25 Issue 1


Full text available:  pdf(2.33 MB) Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#)

Rate based congestion control has been considered desirable, both to deal with the high bandwidth-delay products of today's high speed networks, and to match the needs of emerging multimedia applications. Explicit rate control achieves low loss because sources transmit smoothly at a rate adjusted through feedback to be within the capacity of the resources in the network. However, large feedback delays, presence of higher priority traffic, and varying transient situations make it difficult to ens ...

#### 5 QoS: Rate-based versus queue-based models of congestion control

Supratim Deb, R. Srikant

June 2004 **Proceedings of the joint international conference on Measurement and modeling of computer systems**

Full text available:  pdf(244.38 KB) Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#)


Mathematical models of congestion control capture the congestion indication mechanism at the router in two different ways: rate-based models, where the queue-length at the router does not explicitly appear in the model, and queue-based models, where the queue length at the router is explicitly a part of the model. Even though most congestion indication mechanisms use the queue length to compute the packet marking or dropping probability to indicate congestion, we argue that, depending upon the c ...

**Keywords:** AQM parameters, congestion control, virtual queue

#### 6 The BLUE active queue management algorithms

Wu-chang Feng, Kang G. Shin, Dilip D. Kandlur, Debanjan Saha

August 2002 **IEEE/ACM Transactions on Networking (TON)**, Volume 10 Issue 4

Full text available:  pdf(729.74 KB) Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#)

In order to stem the increasing packet loss rates caused by an exponential increase in network traffic, the ietf has been considering the deployment of active queue management techniques such as Red [14]. While active queue management can potentially reduce packet loss rates in the Internet, we show that current techniques are ineffective in preventing high loss rates. The inherent problem with these queue management algorithms



is that they use queue lengths as the indicator of ...

**Keywords:** congestion control, fair queue, networks, queue management

7 Understanding and improving TCP performance over networks with minimum rate guarantees

Wu-chang Feng, Dilip D. Kandlur, Debanjan Saha, Kang G. Shin

April 1999 **IEEE/ACM Transactions on Networking (TON)**, Volume 7 Issue 2

Full text available:  pdf(258.07 KB) Additional Information: [full citation](#), [references](#), [citations](#), [index terms](#)

**Keywords:** TCP, differentiated services, integrated services, queue management

8 A self-regulating TCP acknowledgment (ACK) pacing scheme

James Aweya, Michel Ouellette, Delfin Y. Montuno

April 2002 **International Journal of Network Management**, Volume 12 Issue 3

Full text available:  pdf(300.16 KB) Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#)

We describe in this paper a new TCP ACK pacing scheme that dynamically tunes its behavior to account for variations or changes in the network load. The scheme does not require the knowledge of when TCP is in the slow-start or congestion avoidance phase to determine the proper ACK pacing rate.

9 Service differentiation using a multi-level RED mechanism

James Aweya, Michel Ouellette, Delfin Y. Montuno

March 2002 **International Journal of Network Management**, Volume 12 Issue 2


Full text available:  pdf(359.48 KB) Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#)

This paper describes a multi-level active queue management scheme that combines packet classification and random early detection (RED) capabilities to provide differentiated performance characteristics for different classes of service. The proposed RED scheme uses a simple control-theoretic algorithm to randomly discard packets with a load-dependent probability when a buffer in a router gets congested.

10 Queue management: Design of a robust active queue management algorithm based on feedback compensation

Zhang Heying, Liu Baohong, Dou Wenhua

August 2003 **Proceedings of the 2003 conference on Applications, technologies, architectures, and protocols for computer communications**

Full text available:  pdf(477.18 KB) Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#)

Active Queue Management (AQM) is a very active research area in networking. The main objective of an AQM mechanism is to provide low delay and low loss service in best-effort service networks. In this paper we propose a new AQM algorithm based on the feedback compensation technique in control theory. The algorithm is called Proportional Integral based series compensation, and Position feedback compensation (PIP). By choosing the appropriate feedback compensation element and its parameters, the p ...

**Keywords:** active queue management, congestion control, feedback compensation, queue length, robustness

11 The effect of uncertain time-variant delays in ATM networks with explicit rate feedback:

a control theoretic approach


Mihail L. Sichitiu, Peter H. Bauer, Kamal Premaratne

August 2003 **IEEE/ACM Transactions on Networking (TON)**, Volume 11 Issue 4Full text available:  pdf(532.25 KB) Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#)

A new, more realistic model for the available bit rate traffic class in ATM network congestion control with explicit rate feedback is introduced and analyzed. This model is based on recent results by Ekanayake regarding discrete time models for time-variant delays. The discrete time model takes into account the effect of time-variant buffer occupancy levels of ATM switches, thus treating the case of time-variant delays between a single congested node and the connected sources. For highly dynamic ...

12 Analysis and simulation of a fair queueing algorithm


A. Demers, S. Keshav, S. Shenker

August 1989 **ACM SIGCOMM Computer Communication Review , Symposium proceedings on Communications architectures & protocols**, Volume 19 Issue 4Full text available:  pdf(1.49 MB) Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#)

We discuss gateway queueing algorithms and their role in controlling congestion in datagram networks. A fair queueing algorithm, based on an earlier suggestion by Nagle, is proposed. Analysis and simulations are used to compare this algorithm to other congestion control schemes. We find that fair queueing provides several important advantages over the usual first-come-first-serve queueing algorithm: fair allocation of bandwidth, lower delay for sources using less than their full share ...

13 Dynamics of random early detection


Dong Lin, Robert Morris

October 1997 **ACM SIGCOMM Computer Communication Review , Proceedings of the ACM SIGCOMM '97 conference on Applications, technologies, architectures, and protocols for computer communication**, Volume 27 Issue 4Full text available:  pdf(1.50 MB) Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#)

In this paper we evaluate the effectiveness of Random Early Detection (RED) over traffic types categorized as non-adaptive, fragile and robust, according to their responses to congestion. We point out that RED allows unfair bandwidth sharing when a mixture of the three traffic types shares a link. This unfairness is caused by the fact that at any given time RED imposes the same loss rate on all flows, regardless of their bandwidths. We propose Fair Random Early Drop (FRED), a modified version of ...

14 Scalable flow control for multicast ABR services in ATM networks

Xi Zhang, Kang G. Shin, Debanjan Saha, Dilip D. Kandlur

February 2002 **IEEE/ACM Transactions on Networking (TON)**, Volume 10 Issue 1Full text available:  pdf(706.72 KB) Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#)

We propose a flow-control scheme for multicast ABR services in ATM networks. At the heart of the proposed scheme is an optimal second-order rate control algorithm, called the  $\alpha$ -control, designed to deal with the variation in RM-cell round-trip time (RTT) resulting from dynamic drift of the bottleneck in a multicast tree. Applying two-dimensional rate control, the proposed scheme makes the rate process converge to the available bandwidth of the connection's most congested link sensed ...



**Keywords:**  $\alpha$ -control, ABR, ATM, RTT variations, buffer control, feedback-soft synchronization (SSP), flow control, multicast, multicast flow control, scalability, second-order rate control, target buffer occupancy

15 Traffic characterization: Characterization of queue fluctuations in probabilistic AQM mechanisms

Peerapol Tinnakornsrisuphap, Richard J. La

June 2004 **Proceedings of the joint international conference on Measurement and modeling of computer systems**

Full text available:  pdf(271.98 KB) Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#)

We develop a framework for studying the interaction of a probabilistic active queue management (AQM) algorithm with a generic end-user congestion-control mechanism. We show that as the number of flows in the network increases, the queue dynamics can be accurately approximated by a simple deterministic process. In addition, we investigate the sources of queue fluctuations in this setup. We characterize two distinct sources of queue fluctuations; one is the deterministic oscillations which can be ...

**Keywords:** active queue management, central limit theorem, queue fluctuations

16 Improving network service quality with explicit TCP window control

James Aweya, Michel Ouellette, Delfin Y. Montuno, Zhonghui Yao

May 2001 **International Journal of Network Management**, Volume 11 Issue 3

Full text available:  pdf(430.01 KB) Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#)

We describe in this paper a new TCP rate control scheme based on a simple recursive algorithm. The idea behind the algorithm is to match the offered network load to the available resources by modifying at an intermediate network element, the receiver's advertised window in TCP acknowledgments returning to the source. We show through simulations that the scheme can efficiently control TCP traffic to limit queue buildups and buffer requirements at the network nodes, resulting in signific ...

17 Queue management: The effects of active queue management on web performance

Long Le, Jay Aikat, Kevin Jeffay, F. Donelson Smith

August 2003 **Proceedings of the 2003 conference on Applications, technologies, architectures, and protocols for computer communications**

Full text available:  pdf(2.04 MB) Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#)

We present an empirical study of the effects of active queue management (AQM) on the distribution of response times experienced by a population of web users. Three prominent AQM schemes are considered: the Proportional Integrator (PI) controller, the Random Exponential Marking (REM) controller, and Adaptive Random Early Detection (ARED). The effects of these AQM schemes were studied alone and in combination with Explicit Congestion Notification (ECN). Our major results are: <ol>

- For off ...

**Keywords:** active queue management, congestion control, web performance

18 Telecommunications: On the impact of concurrent downloads

Yong Liu, Weibo Gong, Prashant Shenoy

December 2001 **Proceedings of the 33nd conference on Winter simulation**

Full text available:  pdf(107.47 KB) Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#)

Concurrent downloads accelerate information access speed for individual web users. The speed-up comes from multiple connections launched for one subject download, which leads to unfairness at user level. In this paper, we study the impact of concurrent downloads on

the network. Particularly, we investigate the fairness between users who employ different downloading concurrency. We also discuss how concurrent downloads affect the transient behavior of the network.

### 19 Active queue management with flow proportional buffering

James Aweya, Michel Ouellette, Delfin Y. Montuno

May 2003 **International Journal of Network Management**, Volume 13 Issue 3

Full text available:  pdf(332.52 KB) Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#)

Most active queue management schemes maintain an average of the queue length which they use together with a number of queue thresholds to detect congestion. However, the setting of the queue thresholds is problematic because the required buffer size for good sharing among TCP connections is dependent on the number of TCP connections using the buffer. This paper describes an improved active queue management scheme which dynamically changes its threshold settings as the number of connections and s ...

### 20 Papers: TCP rate control

Shrikrishna Karandikar, Shivkumar Kalyanaraman, Prasad Bagal, Bob Packer

January 2000 **ACM SIGCOMM Computer Communication Review**, Volume 30 Issue 1

Full text available:  pdf(1.12 MB) Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#)

This paper presents TCP rate control, a new technique for transparently augmenting end-to-end TCP performance by controlling the sending rate of a TCP source. The sending rate of a TCP source is determined by its window size, the round trip time and the rate of acknowledgments. TCP rate control affects these aspects by modifying the ack number and receiver window fields in acknowledgments and by modulating the acknowledgment rate. From a performance viewpoint a key benefit of TCP rate control is ...

Results 1 - 20 of 197

Result page: [1](#) [2](#) [3](#) [4](#) [5](#) [6](#) [7](#) [8](#) [9](#) [10](#) [next](#)

The ACM Portal is published by the Association for Computing Machinery. Copyright © 2004 ACM, Inc.

[Terms of Usage](#) [Privacy Policy](#) [Code of Ethics](#) [Contact Us](#)

Useful downloads:  [Adobe Acrobat](#)  [QuickTime](#)  [Windows Media Player](#)  [Real Player](#)